

**Education Station at 'Ahihi-Kina'u Natural Area Reserve  
Final Report (Report 8A)  
September 2004 – August 2006**

**Ma'aonakala, South Maui**

**Hawai'i Tourism Authority Contract with DLNR No. BT-04-64**



**Submitted by  
Cheryl Vann, Hannah Bernard and Judy Edwards  
for Hawai'i Wildlife Fund**

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## INTRODUCTION

This report is the eighth and final report submitted in a series presenting qualitative and quantitative findings of the education/outreach effort by Hawai'i Wildlife Fund (HWF) at the Ma'aonakala/Dumps location in the 'Ahihi-Kinai Natural Area Reserve (NAR). This project was made possible by a grant from the Hawai'i Tourism Authority.

In collaboration with the State Department of Land and Natural Resources (DLNR) HWF naturalists man a portable Education Station at Ma'aonakala/Dumps, roughly a mile inside the northern boundary of the NAR (GPS coordinates N 20 degrees 36.960', W 156 degrees 26.156'). Naturalists at the Education Station supply information for appropriate behavior around archaeological sites and the natural resources of the area, which include fragile reefs and their associated animal assemblages, and cultural artifacts as well as fragile geological features. Materials available for public view include reference books, maps, artifacts, information sheets, sustainable wildlife viewing guidelines and brochures from Federal, State, and non-profit entities whose goals align with those of State resource managers.

Most people who utilize the education materials are visitors to the island, but residents also make use of the fish charts, maps, various reference materials and "local" knowledge. Comments naturalists receive are uniformly positive, most often thanking them for creating an education effort "in the middle of nowhere." Since the inception of this program, it has now become accepted as a DLNR-recognized Mauka/Makai Watch Program, with this report representing a summary of the educational activities component. One or two roving Department of Forestry and Wildlife (DOFAW) Rangers and one stationary naturalist are on-site 7 days a week, and researchers are present collecting human impact data twice weekly and twice monthly for two separate but related projects.

The first progress report submitted to HTA in the fall of 2004 did not include data analysis. The initial data report was submitted in January of 2005. Data reports since then have been submitted in May, September, and November of 2005, and February and June of 2006. This final report summarizes data collected over the entire two year research period.<sup>1</sup>

Naturalists on-site at Ma'aonakala are in visual, phone and/or radio contact with DLNR staff, primarily Rangers working in the NAR and DOCARE officers patrolling the region. Working together, they create a team of eyes and ears to help educate the public and to mitigate illegal activity in the NAR. Their presence at the site (from 9:00 a.m. to 1:00 p.m. during the first year of funding, and then until 2:00 pm during the second year) discourages car break-ins as well as obvious poaching activity. They are able to contact the Ranger(s) immediately, if needed, to pass on reports by visitors and residents of safety issues, serious injuries, or suspicious activity in the NAR. The naturalist team has initiated a formal response protocol involving the Maui Police, water rescue, DOCARE, and DOFAW personnel in order to better assist in

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<sup>1</sup> There were 54 days during the two year research period during which no data were collected, due to weather or illness. In all, therefore, this data set is comprised of 663 days.

emergency on-site situations, including scenarios involving injury and/or death.

### TRENDS MEASURED BY NATURALISTS

While engaging in educational outreach, naturalists have also made quantifiable observations categorized in 5 major components:

1. Ranger Assistance with Resource Protection and Health & Safety Incidences
2. Trends in Visitor Information Requests
3. Peak Arrival Times at "Dumps" /Ma'aonakala
4. Parking Lot Carrying Capacity
5. Educational Outreach Success – Number of Visitors Contacted

#### 1) Ranger Assistance with Resource Protection and Health & Safety Incidences

Some instances in which HWF staff have assisted visitors, residents, or Rangers are listed in Table 1, by quarter, September 2004 – August 2006:

**Table 1: Record of HWF staff assistance to Rangers, Visitors and Residents On-Site September – December 2004**

9/21/04	<b>Flat Tire:</b> Tourist with a flat tire borrows phone
10/21/04	<b>Abandoned Car:</b> Stolen, wrecked, abandoned car/ Maui Police Dept. at 12:30
10/22/04	<b>Illegal fishing/Poaching:</b> Poachers, fishing/poachers still in lot at 1:00
10/24/04	<b>Break in:</b> Tourist victim of break-in borrows phone/DOCARE 12:30, MPD at 12:45
11/30/04	<b>Opihi poaching:</b> Opihi poachers reported
12/2/04	<b>Opihi poaching:</b> Opihi poachers seen/DOCARE called

#### January-April 2005

1/8/05	<b>Illegal fishing/Sewage:</b> Spearfisher in NAR/sewage reported
3/25/05	<b>Drowning:</b> Drowning (visitor from Alaska) reported to police. Assisted in traffic flow during medical response.
3/29/05	<b>Fish feeding:</b> Illegal fish feeding reported in the NAR
4/1/05	<b>Turtle stranding:</b> Green sea turtle stranded
4/10/05	<b>Boat anchored:</b> Boat illegally anchored in the NAR
4/16/05	<b>Opihi poaching:</b> Ranger confronts opihi pickers in the NAR
4/18/05	<b>Unsafe ocean conditions:</b> Visitors directed away from unsafe ocean conditions in La Perouse Bay (large south swell)

#### May – August 2005

5/2/05	<b>Sewage:</b> Sewage reported in 'Ahihi Bay. Ranger called.
5/9/05	<b>Gratitude:</b> Acknowledged by a resident surfer that it's nice to have staff here for security reasons (to prevent car break-ins).
5/20/05	<b>Illegal tour operations?:</b> Pickup truck with kayaks notes going down the road to La Perouse. Guy known as "Red" may be running clandestine commercial activities.
5/22/05	<b>Boats in NAR:</b> Two boats reported within the NAR.

5/26/05	<b>Opihi Poaching:</b> Ranger stopped young man who was picking opihi in the NAR.
5/28/05	<b>Lost items:</b> Residents stopped by education table to get Ranger phone # regarding lost items.
5/31/05	<b>Police Report:</b> Someone filing a police report requested Ranger's phone #.
6/4/05	<b>Injury:</b> Bleeding snorkeler from La Perouse Bay.
6/7/05	<b>Police Report:</b> Filled out a police report for DLNR.
6/11/05	<b>Injury:</b> A bleeding surfer from 'Ahihi Bay.
6/22/05	<b>Stolen item:</b> Visitors report a stolen purse. Rangers called.
7/1/05	<b>911 Call:</b> Emergency call made and ambulance sent for a 7 year old experiencing an allergic reaction. Her father asked at the education table for us to call 911.
7/3/05	<b>Boat in NAR:</b> Boat reported within the NAR. Ranger called.
7/5/05	<b>Lava rock removal:</b> Lava rock being loaded into a truck. Rangers called and report made.
7/17/05	<b>Lock out:</b> Lock-out reported to MPD. Opihi pickers apprehended by Ranger. Turtle with hooks in fin reported to George Balazs and Cheryl King.
7/21/05	<b>Illegal opihi harvesting:</b> Rangers and DLNR ticketed a man for picking opihi in the NAR.
7/22/05	<b>Entangled turtle:</b> Hawksbill turtle sighted swimming with hooks and lines on fins.
7/24/05	<b>Turtle harassment/Coral:</b> Spoke with people harassing turtles and man standing on the coral.
7/31/05	<b>Illegal fishing:</b> Report of illegal fishing in the NAR.
8/3/05	<b>Entangled turtle:</b> Green sea turtles sighted with hooks in mouth and front flipper.
8/7/05	<b>Boat in NAR:</b> Boat reported within the NAR. Ranger called.
8/8/05	<b>Illegal Campfires:</b> Reports of illegal campfires being built on shore.
8/18/05	<b>Injury:</b> Provided band-aids to girl who cut her hand on a rock.
8/19/05	<b>Entangled turtle:</b> Hawksbill turtle sighted with fish net entangled on left fins.
8/20/05	<b>Boat anchored:</b> Boat reported anchored within the NAR. Ranger called.
8/22/05	<b>Sewage:</b> Ranger called about effluent reported in bay.

### September – December 2005

9/9/05	<b>Illegal Spearfishing:</b> Spearfishing reported. Ranger called the police.
9/10/05	<b>Entangled turtle:</b> Sea turtle reported swimming with tumor on head and entangled in lines.
9/17/05	<b>Illegal Spearfishing:</b> Two fishermen with spear guns reported to Rangers.
9/21/05	<b>Boat in NAR:</b> Boat reported within the NAR. Ranger called.
9/22/05	<b>Car Break Down:</b> Helped a woman whose car broke down in the parking lot.
9/25/05	<b>Lava rock removal:</b> Person in truck seen taking lava rocks reported to Rangers.
10/16/05	<b>Illegal fishing:</b> Called Rangers about reports of illegal fishing in the NAR.
10/17/05	<b>Airgun shots:</b> Called Rangers and MPD about airgun shooting near Keone'ō'io.
11/14/05	<b>Boat anchoring:</b> Called Rangers about Sea Escape boat trying to anchor in the marine reserve.
11/16/05	<b>Monk seal harassment:</b> Called Rangers about a resting monk seal being harassed by people on the beach.
11/18/05	<b>Injury:</b> Helped a woman with a cut on her foot.
11/20/05	<b>Commercial operations?</b> Commercial diver license plate reported.
11/22/05	<b>Break –in:</b> A parking lot break-in reported at 3pm (after our naturalists were

	gone).
12/7/05	<b>Prevention (illegal fishing):</b> Stopped a tourist with a fishing pole from going down to the water.
12/26/05	<b>Spearfishing:</b> Report of spearfisher inside the north end of the reserve.
12/27/05	<b>911--Airlift:</b> A child stung by jelly fish was air lifted out.

**January – April 2006**

1/1/06	<b>Boat anchored:</b> Rangers notified about a boat seen anchored in the reserve.
1/12/06	<b>Boat in NAR:</b> Rangers notified of a commercial boat sitting about 200 yards from the point in 'Ahihi Bay.
1/14/06	<b>Boat in NAR:</b> Rangers notified of a small boat fishing in the reserve.
1/16/06	<b>Illegal fishing:</b> Fishermen in the NAR ticketed by Rangers this morning.
1/20/06	<b>Illegal fishing:</b> DOCARE Police came by regarding a report of illegal fishing in the reserve.
1/21/06	<b>911--Airlift:</b> A girl who fell on her back during a snorkeling trip at Aquarium was air lifted out by a fire rescue helicopter.
1/28/06	<b>Opihi poaching?</b> Noted license plate of four locals apparently eating opihi while parked at Dumps.
1/29/06	<b>Illegal fishing?</b> Alerted Rangers of a vehicle full of fishing gear parked in the lot.
2/4/06	<b>Break down:</b> Noticed a car was broken into and called a ranger, who called the MPD.
2/12/06	<b>Injuries and break-in:</b> Rangers called about two injuries and a potential break-in.
2/16/06	<b>Whale harassment:</b> Report of people riding whales in 'Ahihi Bay. NOAA Agent came down to check on it and interviewed people on beach. Whale came to boat-no chasing.
2/17/06	<b>Injury:</b> The parents of a young boy who got sea urchin spines in his foot came to the education table looking for help. Another tourist (doctor) on site helped out.
3/2/06	<b>Boat anchored:</b> Boat anchored in the NAR. Ranger called.
3/5/06	<b>Boat in NAR?</b> Boat close to reserve boundary.
3/10/06	<b>Lock out:</b> A surfer lost his car keys. The naturalist staff at the education table called the AAA for him.
3/17/06	<b>Illegal fish feeding/Injury:</b> Ranger stopped people in the reserve that were feeding peas to the fish. And our naturalist staff provided bandaids to a woman who fell on the Fishbowl trail and cut her forearm.
3/18/06	<b>Commercial tour:</b> Ranger called about a van parked here to do a commercial tour.
3/23/06	<b>Break down:</b> Helped out a person whose car broke down near our education table.
3/24/06	<b>Injury:</b> Provided bandaids to a woman who cut her big toe hiking in La Perouse.
3/25/06	<b>Lock out:</b> Another car lock-out. Called AAA.
3/29/06	<b>Illegal spearfishing and pole fishing:</b> Accompanied Ranger who apprehended a guy with a spear at the Aquarium and a guy with a fishing pole in 'Ahihi Cove.
4/19/06	<b>Illegal fishing?</b> Informed ranger of a group possibly intending on illegally feeding fish in the reserve.
4/22/06	<b>Illegal fishing:</b> A ranger and DOCARE were informed of two tourists who said they wanted to go fishing at "Fishbowl" and who were carrying fishing poles and heading in that direction.
4/23/06	<b>Entangled turtle:</b> Ranger called about a turtle with a 3 inch fish hook in the front

	right flipper.
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**May – August 2006**

5/12/06	<b>Illegal net fishing:</b> Called DLNR/DOCARE about a report of a net set up in La Perouse Bay that extended towards the 'Ahihi-Kina'u NAR boundary.
5/17/06	<b>Hunting and poaching:</b> Ranger and DOCARE attempted to apprehend three men hunting and poaching in the reserve.
5/21/06	<b>Abandoned car:</b> Ranger called about an abandoned car at 'Ahihi cove. Car towed.
5/24/06	<b>Break-in:</b> Ranger called about a car break-in at La Perouse Bay.
5/29/06	<b>Illegal spearfishing?</b> Called ranger about a spear fisherman heading toward 'Ahihi cove.
6/2/06	<b>Lock out:</b> Ranger helped a couple with their keys locked in the car.
6/4/06	<b>Boat in NAR:</b> A boat was inshore, near the NAR. A Ranger looked into it.
6/4/06	<b>Pipe bombs:</b> Ranger responded to a couple pipe bombs on the road.
6/10/06	<b>Boat in NAR:</b> Ranger spotted a small boat fishing within the NAR.
6/18/06	<b>Lock out:</b> Naturalist loaned cell phone to tourist with keys locked in car. Second naturalist drove the visitors back to the rental car agency.
6/19/06	<b>Gratitude:</b> People worried about car break-ins feel better with the naturalist presence.
6/19/06	<b>Injury:</b> Naturalist gave a bandaid to a girl who ripped a nail.
6/24/06	<b>Jet skis in NAR:</b> Two jet skis were racing within the NAR boundaries at 9:25am. Naturalist took photos.
7/7/06	<b>Resting monk seal:</b> Naturalist called rangers and others to report a monk seal on shore in 'Ahihi.
July 8-19	<b>Resting monk seal:</b> For nearly 2 weeks the naturalist relocate to the beach to protect the monk seal (keep people from getting too close) and answer questions about it.
7/15/06	<b>Entangled turtle:</b> Rangers attempted to rescue a turtle entangled with fishing lines.
7/19/06	<b>Marine debris removal:</b> Volunteers pulling plastic garbage out of the shoreline reef area.
7/21/06	<b>Marine debris removal:</b> More marine debris removal.
7/26/06	<b>Gratitude:</b> Some local residents said they were happy about the naturalist presence in the parking lot. It made them feel safer parking here.
7/27/06	<b>Victims of theft:</b> Naturalist loaned cell phone to some La Perouse Bay theft victims.
7/28/06	<b>Illegal fishing:</b> Naturalist heard from surfers that someone was fishing off the point at Dumps. The naturalist called the Ranger and DOCARE officers to investigate. DOCARE arrived within the hour. Fisherman given a warning by DOCARE.
7/29/06	<b>Prevention of illegal fishing:</b> Someone asked about fishing in the reserve and was dissuaded by the naturalist.
8/1/06	<b>Boat in NAR:</b> Naturalist reported a boat in 'Ahihi Bay just about 200 yards out at 12:35pm.
8/4/06	<b>Stolen vehicle:</b> MPD stopped by to tell naturalist about a car stolen from Big Beach. Gave the car's description and asked the naturalist to report it if seen.
8/5/06	<b>Illegal fishing and boat in NAR:</b> Ranger spotted a fishing boat in the reserve.

	They were actively fishing. Fishermen were given a warning at the boat ramp.
8/9/06	<b>Injury:</b> Naturalist provided a bandaid to a guy who cut his foot (not a serious cut).
8/9/06	<b>Prevention (harvest of cowries):</b> Naturalist got two kids to return cowry shells they'd collected from 'Ahihi Bay.
8/13/06	<b>Sanitation problem:</b> A mother let her son defecate on the west side of the parking lot.
8/18/06	<b>Gunshots:</b> Naturalist was warned by the Ranger there is a man with a rifle in the reserve, and to call if the naturalist heard any gunshots. (None heard.)
8/22/06	<b>Injury:</b> A young lady who cut her foot used the first aide box.
8/23/06	<b>Injury:</b> Naturalist gave a bandaid to a girl who cut her toe on the lava.

The incidents documented by the Hawai'i Wildlife Fund naturalists in the preceding table can be pooled into six major categories:

- Resource Abuse
  - Illegal Fishing-- pole, net, and spear (17 incidences)
  - Poaching --primarily of opihi (7 incidences)
  - Boat anchoring in the NAR (5 incidences)
  - Boats motoring through the NAR (12 incidences of boats and one of jet skis)
  - Standing on the coral (1 incidence— grossly under-reported since naturalists are not stationed by the water)
  - Lava rock removal (2 incidences)
  - Protected species (turtles, whales, monk seals) harassment (3 reports)
  - Illegal fish feeding (2 reports)
- Resource Protection
  - Prevention of illegal fishing attempts (innumerable)
  - Protection of resting monk seal (2 week-long incidences)
  - Contacting proper authorities to help entangled sea turtles
  - Marine debris removal (several incidents)
- Health and Safety
  - Injuries—primarily cuts from lava and sometimes from coral (12 incidences)
  - Presumed drowning (1 incident)
  - Emergency airlifts (2 incidents)
  - 911- calls (one in addition to the airlifts)
  - Assistance with police reports (2 incidents)
  - Reports of effluent/sewage on the water (3 reports)
  - Gunshots and airgun shots heard (2 incidences)
- Commercial Use
  - Illegal tour operations (3 incidences)
- Theft
  - Stolen items and vehicles (3 incidences)
  - Vehicle break ins (4 incidences)
- Vehicles
  - Abandoned vehicle (2 incidences)
  - Broken down vehicle (4 incidences)
  - Lock out (5 incidences)

As a model for the state's Mauka-Makai Watch Program, the naturalists continue to assist the DOCARE and NAR rangers in law enforcement issues as trained observers as well as educators.

The most common incidences of resource abuse are illegal fishing and poaching, followed by boats illegally motoring through and/or anchoring in the NAR. Hawai'i Wildlife Fund naturalists contacted DLNR Rangers (and sometimes the MPD) about these incidents. The most common health and safety issues are injuries -- primarily scrapes from the sharp lava rock. Serious incidences included a drowning in March 2005 and two emergency airlifts within a month of one another (December 2005 and January 2006). The first involved a child stung by a jelly fish, and the second involved a child who fell on her back while on a snorkeling trip to Kalaeloa ("the Aquarium"). Equipped with cell phones in a remote area, the naturalists provide an important point of contact for alerting Rangers, the MPD, and emergency personnel when the need arises.

## 2) Trends in Visitor Information Requests

Naturalists have also been tracking trends in information requests in order to assist in the development of a future NAR brochure that will anticipate the most common visitor concerns. Funding for this brochure has been secured by a grant from the National Fish & Wildlife Foundation to HWF. Naturalists must prioritize interacting with visitors at the table over collection of data, therefore, their tracking tallies must be considered a minimum number. Although the naturalists may not be able to tally every single request due to the nature of interacting with visitors, there are some interesting implications for resource managers in the information requests (see end of this section).

Of the more than 25 common topics of interest, the top ten requests for information naturalists receive are listed in Table 2 below. Table 2 reflects the number of requests collected in 585 days from December 12, 2004 - August 31, 2006:

**Table 2: Top 10 Information Requests**

Rank	Topic	# Requests	% of top 10
1	Snorkeling	6,731	32.8%
2	Fishbowl	4,310	21.0%
3	Lava/Geology	2,319	11.3%
4	La Perouse	1,559	7.6%
5	Turtles	1,538	7.5%
6	Big Beach	1,069	5.2%
7	Hiking	1,023	5.0%
8	Aquarium	992	4.8%
9	Dolphins	654	3.2%
10	Black Sand Beach/Red Sand Beach	335	1.6%
	<b>Total Requests</b>	<b>20,530</b>	<b>100.0%</b>



### Snorkeling

Generating nearly 33% of all requests, snorkeling is very popular. Visitors have often been directed to the NAR for snorkeling by their hotel staff, guidebooks, etc., or are exploring the island for the express purpose of finding a "wilder" place to snorkel than the crowded coves near their resorts. Naturalists usually assist visitors in locating 'Ahihi Bay for snorkeling and teach them how to employ sustainable snorkeling and diving practices.

### Access to the Fishbowl (Moku Ha)

Twenty-one percent of all requests concern advice about, or directions to, the shallow, enclosed cove known as "Fishbowl". Nearly every Fishbowl request is from people holding a *Maui Revealed* guidebook. Since the deployment of boulders to block parking at the trailhead, parking is now, by default, at Ma'aonakala/Dumps where the Education Station is located. By informal estimate, roughly 90% of the would-be hikers that naturalists talk to about the hike/snorkel make alternate plans after hearing discouraging details of access (much longer, hotter hike), concerns about overuse of such a fragile, small bay, and suggestions of other sites less likely to be so crowded and impacted. The remaining percentage goes anyway.

Placement of boulders along the road by NAR staff has deterred some of the foot traffic since people now must park at Ma'aonakala, which adds at least 15 minutes to the hike each way. Several actions have apparently increased interest in these remote locations: recent articles in the Maui newspapers on the Keone'ō'io Advisory Group and NARS Commission recommendations to close access to Fishbowl (and Aquarium), and proposed legislation introduced by Senator Roz Baker to implement these recommendations (which did not pass). In addition, the DLNR hosted a public meeting to gather public input on their proposed changes to the NAR rules that would allow them to implement the NARS Commission's recommendations (Appendix I).

After the naturalists explain why these sites are recommended for closure, the public opinion is generally on the side of trail closure. Despite naturalist's efforts, counters placed on the trail by NAR Rangers in the fall of 2005 have tallied 300 people a week on the trail (Matt Ramsey, pers. comm.).

### Lava

The lava fields fascinate the visitors and provide an opening for further education about the sensitive nature of the NAR. There are daily requests for brochures or other printed information about the age and formation of these lava fields. Naturalists use books, photos, and articles gleaned from many sources to help explain the geology of the NAR, and the NAR brochure that is being prepared will cover this topic more efficiently.

### La Perouse Bay (Keone'ō'io)

Visitors have little knowledge of Keone'ō'io and stop to ask directions to La Perouse Bay. Many of them, unfamiliar with the rough ocean conditions and strong tradewinds, expect to be able to snorkel there. Naturalists advise beginner snorkelers against attempting this activity in La Perouse Bay, redirecting them to safer areas (especially 'Ahihi Bay).

### Turtles

As green sea turtle populations continue to grow, and familiarity with turtles increases,

the quest for a sea turtle interaction has become part of the expected “Maui Vacation Experience”. Naturalists use a new DAR-produced educational handout on green sea turtles and the CORAL Alliance-produced guidelines for viewing sea turtles. These handouts are extremely helpful tools to educate visitors on appropriate behavior.

### Big Beach

Requests for Big Beach have dropped dramatically since the installation of clear, legible signage nearly a year after the Education Station was established. Data from the last nine months show requests have dropped to 5.2%, making Big Beach drop to the sixth most requested topic.

### Hiking

Hiking books and maps show hiking trails in the NAR—some of which exist and some of which don't. Many hikers stop by the Education Station to confirm that they are going in the right direction to find various trailheads. Naturalists employ Na Ala Hele Trails' guidelines to make sure that they understand not only the danger of dehydration and sunburn on the exposed lava fields, but also to protect archaeologically sensitive areas.

### Aquarium (Kalaeloa)

The issues around the “Aquarium” are similar to those surrounding the “Fishbowl” site. However, restricted parking access along the road has funneled would-be Aquarium hikers into the La Perouse/Keone‘ō‘io parking lot.

### Dolphins

A “dolphin experience” is still sought after by many people who have been informed that dolphins are found in or around La Perouse Bay. Most are unaware that dolphins are a federally protected species, and don't realize that Hawai'i's spinner dolphins (the primary species of dolphin found around the NAR) sleep/rest during the day. When naturalists explain spinner dolphin biology to them, many visitors express a desire to engage in better stewardship of dolphins. However, there is still a core of regular “dolphin swimmers” who cannot be dissuaded from disturbing the dolphins.

### Black/Red Sand beach

Recent signage has made this beach much easier to find, although the signs are still slightly confusing. Visitors are looking for a “black/red sand beach” and think that this is the name of the beach. Newly placed DLNR signs indicate that the beach is State land. However, new construction is occurring in this area and obscures sign visibility.

Table 3 displays a summary of the most recently asked questions from January 1, 2006 through August 31, 2006 (N=221).

**Table 3: Top 25 Information Requests**

Rank	Topic	# Requests	% of top 10
1	Snorkeling	3,682	29.3%
2	Fishbowl	2,011	16.0%
3	Lava/Geology	1,198	9.5%
4	Turtles	908	7.2%

5	La Perouse	747	5.9%
6	Hiking Trails	640	5.1%
7	Aquarium	455	3.6%
8	Dolphins	321	2.6%
9	Lost/Asking Directions	262	2.1%
10	Surfing	254	2.0%
11	Reserve Brochure	221	1.8%
12	Sharks	200	1.6%
13	Closure/Blockade	197	1.6%
14	Monk Seals	194	1.5%
15	'Ahihi Bay	189	1.5%
16	Hana	183	1.5%
17	Marine Reserve	166	1.3%
18	Black Sand/Red Sand Beaches	162	1.3%
19	Big Beach	161	1.3%
20	Whales	151	1.2%
21	Little Beach	85	0.7%
22	Archaeological Sites	81	0.6%
23	Fish Identification	65	0.5%
24	Wedding Beach	29	0.2%
25	SCUBA	14	0.1%
	Total Requests	12576	100.0%

The majority of the top 10 requests are the same. (The original top 10 requests are highlighted in yellow in Table 3.) Requests for a reserve brochure ranked 11<sup>th</sup>, justifying the need for the brochure that is currently being designed using the National Fish and Wildlife Foundation funds. While there is no category for it listed in the above tables, many people have requested maps of the area. A map of the reserve and its surrounding areas will be included in the NAR brochure.

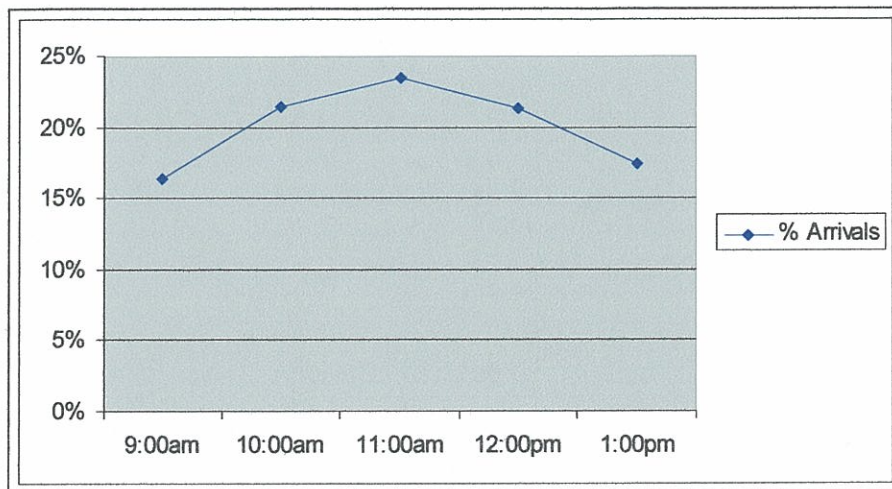
### 3) Peak Arrival Times at "Dumps" /Ma'aonakala

The mean percentage of vehicle arrivals at "Dumps"/Ma'aonakala every half hour (based on 67 days between April 28, 2005 – May 2, 2006) is shown below in Table 4 and Figure 1. Arrival times are fairly evenly distributed each half hour, peaking between 10:30am - 11:00am.

**Table 4: Mean Vehicle Arrival Times per hour at "Dumps"**

Time	9:00am	10:00am	11:00am	12:00pm	1:00pm
% Arrivals	16.4%	21.5%	23.5%	21.3%	17.4%





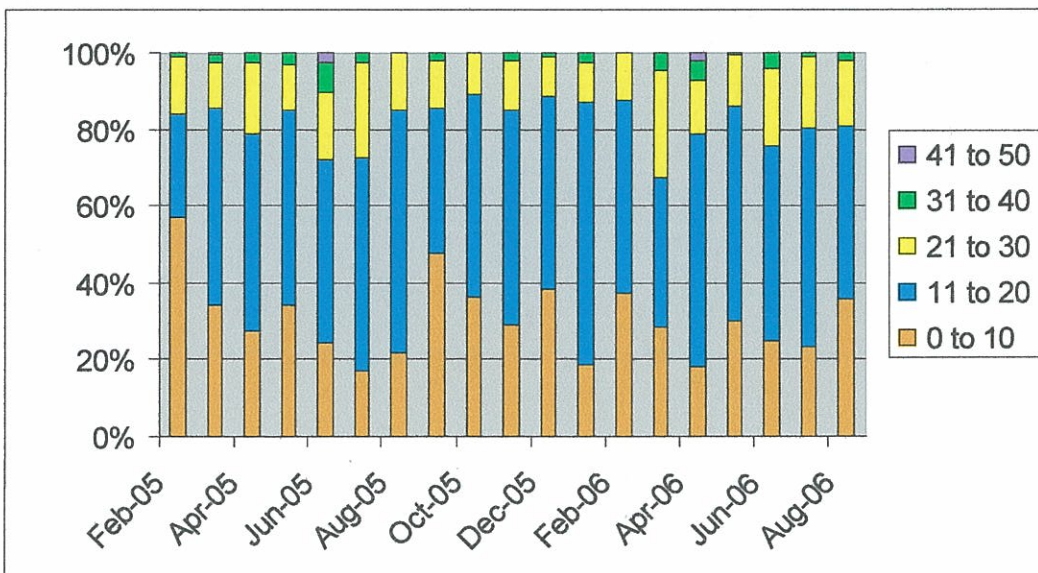
**Figure 1: Mean Percentage of Vehicle Arrivals to "Dumps" hourly (April '05 – May '06)**

#### 4) Parking Lot Carrying Capacity

Peak arrival time to "Dumps" /Ma'aonakala is approximately 10:30 to 11:00 am, but the parking area is rarely at capacity. This lot can hold at least 50 vehicles, but roughly 80% of the time there are 20 or fewer vehicles parked there (Table 5). This is also shown on Figure 2, where the combination of the orange category (the presence of up to 10 vehicles only) with the blue category (the presence of anywhere between 11 and 20 vehicles) together account for normal site conditions 80% of the time.

**Table 5: Frequency of Parked Vehicles at "Dumps" (February 2005 - August 2006)**

Number of Vehicles	0 to 10	11 to 20	21 to 30	31 to 40	41 to 50
MEAN	30.7%	51.2%	15.6%	2.3%	0.3%



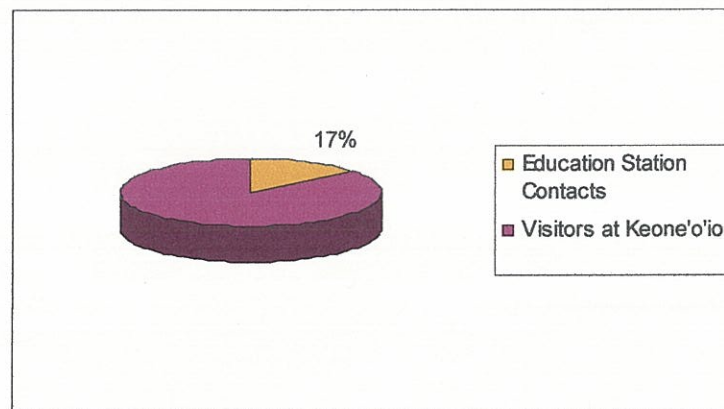
**Figure 2: Vehicle Groupings over nine months (February 2005-August 2006)**

Rarely are more than 40 vehicles at the site at the same time (less than half of one percent of the time) (see purple category in Table 5 and Figure 2). HWF naturalists believe the site has reached or very nearly reached capacity at those few peak times. It is under those circumstances that vehicles attempt to park further into the rough lava rock areas and are more prone to getting stuck. Currently, with an average visitation of 139 people over the five-hour period the Education Station is staffed, the numbers are manageable, and the turnover rate is fairly high (i.e., most visitors engage in relatively short visits).

### 5) Educational Outreach Success – Number of Visitors Contacted

HWF naturalists provided information to and answered questions for at least 14,612 people at Ma'aonakala during the first year of the HTA-funded project. This represents 40% of all the visitors to the site during the hours the naturalists are there (9:00 am – 1:00 pm)<sup>2</sup>.

Beginning in September 2005, the Education Station coverage was extended by one hour (until 2:00 pm). During the 311 data days in the one year period between September 2005 and August 2006 HWF naturalists counted 44,025 people in the parking lot and talked to 19,855 (or 45.1%, Table 7) of them<sup>3</sup>.



**Figure 3: Comparison of Education Station Contacts to Numbers of Visitors at La Perouse Bay/Keone'o'io**

While HWF naturalists are reaching nearly half of all people who come to Ma'aonakala, a large number of people traveling through the NAR never stop there but continue down to the end of the road (La Perouse Bay/ Keone'o'io). Those 40-45% being reached at the education station are, comparatively, only 17% of the numbers known to visit La Perouse Bay, based on HWF census surveys conducted twice monthly at Keone'o'io (Figure 3).

## DISCUSSION

The primary purpose of naturalists at the Ma'aonakala site is to educate visitors to the area; however, their presence has also addressed a real human health and safety need at this remote location. In addition to the daily educational outreach that naturalists provide, they have

<sup>2</sup> The first year contained 262 data days between November 2004 and August 2005.

<sup>3</sup> The second year contained 311 data days between September 2005 and August 2006.



assisted DLNR Rangers and the MPD with the reporting of illegal activities and health and safety issues, sometimes as much as eight or nine times per month. While the education station does not face 'Ahihi Bay, its close proximity allows naturalists to hear reports from visitors about boats anchored in or motoring through the NAR. They also are informed of and/or witness illegal fishing and poaching activities, and thefts and break-ins, all of which they relay to the Rangers. The Rangers can then determine whether they should investigate further or contact DOCARE agents immediately.

Naturalists have served as important points of contact for reporting serious accidents requiring emergency airlifts, ambulances and/or police. They have provided minor first aid for at least a dozen lava scrape-related minor injuries. They have also loaned the cell phone to people needing assistance with vehicle lockouts or breakdowns.

Naturalists also serve an important role in natural and cultural resource protection. In addition to educating Education Station visitors about proper etiquette around archaeological sites, coral, endangered species, and other marine life, they provide hands-on assistance. For a two-week period in July '06, they assisted in protecting a molting monk seal hauled out on the beach and in educating the public about their plight. They have also prevented some attempted illegal fishing efforts, and have removed marine debris. They relay reports of entangled turtles to the Rangers as well, who dispatch the appropriate authorities to the site.

Another important area of intervention has been the discouragement of the use of "Aquarium" and "Fishbowl", two sites in the NAR being evaluated for future closure due to human-related impacts. Rangers placed boulders blocking small parking areas along the road leading through the middle of the NAR in 2005 to discourage use of the trails leading to these small, overused bays. The HWF naturalists were the point of contact educators, explaining the blockade and asking people to please kokua. The naturalists have had a fair amount of success in redirecting visitors to more appropriate areas to snorkel or hike.

Naturalists have conducted surveys at the Education Station during the last two years to learn the most commonly asked questions. Now HWF and the NAR managers have a good idea what visitors are interested in knowing and doing at this site. The top ten list includes activity requests (wanting to know good places for snorkeling and hiking), location requests (how do I find "Fishbowl", "Aquarium", La Perouse Bay, Big Beach, Black Sand Beach and Red Sand Beach), and natural and cultural resource requests (I want to see/swim with turtles and dolphins, and I want to know more about the geology of the area). Another popular request is for a map of the area. All of this information has been used to better assist the visitors each day and is being evaluated as the Reserve brochure is being prepared.

The peak use time at Ma'aonakala is very similar to that at La Perouse/Keone'ō'io, with the majority of people arriving in the late morning between 10:30 and 11:00 am. The parking area is not usually at capacity (there are 20 or fewer vehicles there 80% of the time), but has had a few isolated peak use periods of more than 40 vehicles. These peaks have created temporary overcrowded conditions and may indicate the carrying capacity for the site.

Naturalists have provided outreach to nearly 35,000 people over the last two years, which is between 40 – 45% of the visitors to the site. While this is a good rate of success for outreach

education, these numbers only represent about 17% of the total visitors coming to the NAR (based on HWF census data collected at La Perouse/Keone'ō'io). The Education Station, therefore, is not strategically placed to contact the highest number of people possible using and/or passing through the NAR, although this location may alleviate some of the traffic pressures at Keone'ō'io. In addition, this location does provide the largest turnaround/parking area at the north end of the NAR.

If the Education Station was located at the higher volume area, additional naturalists would be needed and/or a semi-permanent structure for display material. One person cannot always accommodate all of the requests for information and many Education Station visitors depart before their questions can be answered due to the clustering effect (more than 2 – 4 people standing in front of the naturalist/table tends to preclude others from interacting). However, many visitors do glean valuable information by listening to the questions of those who are already engaging the naturalist when they walk up.

At the onset of this program, a large informational display was used that was easy to view adjacent to the naturalist's table. Unfortunately, this display was destroyed by localized "dust devils" that plague the area on a regular basis (Appendix II). A more protective and semi-permanent structure is being evaluated for placement in this area. Resource managers may want to evaluate the numbers of visitors to Keone'ō'io (mean no. visitors = 367) vs. Ma'aonakala (mean no. visitors = 142) from 9:00 a.m. – 2:00 p.m. while making this decision. Alternatively, visitors could be mandated to traverse through an educational display or stopped as they enter the NAR to receive educational materials and/or a conservation fee. Finally, the addition of a roving naturalist at the south end of the NAR (Keone'ō'io) could also reach many more people.

This program is one of the most promising tools for resource managers to empower community-based resource management with a very small amount of capital. A coordinator, naturalist and researcher have been funded at ~\$50,000.00/year for the last 2 years with the support of the Hawai'i Tourism Authority (HTA), the H.K. Castle Foundation and the National Fish and Wildlife Foundation. The core funding from HTA was supplied for the last two years and that grant is complete. This vital program needs additional support from a reliable source such as DLNR in order to continue and to reduce the effort required to regularly seek new funding.

#### ACKNOWLEDGEMENTS

This program was made possible with a grant from the Hawai'i Tourism Authority and would not have succeeded without the active partnership of many divisions of the State Department of Land and Natural Resources, including DOCARE, DOFAW, and DAR. The level of commitment, productivity, and "heart" in the Rangers and Naturalists currently working in the NAR is inspirational. This productive and congenial working relationship has been cited as a model for other public/private coastal conservation efforts involved in the DLNR's Mauka/Makai Watch Program.

## Appendix I.

## The Maui News, June 2006



At the Ahihi-Kinau Natural Area Reserve, a shallow cove commonly called the Aquarium is known for its clear waters and teeming reef life. But heavy use of the reserve has prompted the state to consider rules that would allow restrictions on access to areas of the reserve.

The Maui News / MATTHEW THAYER photo

**Reserve rules receive support**

By KRISTA WALTON, Staff Writer

WAIKAPU – Supporters of the Ahihi-Kinau Natural Area Reserve urged the state to adopt rules that would restrict activity within Hawaii's reserves, with many saying on Wednesday the changes have long been necessary.

"I fully support the rule changes," said Pat Borge, a member of the Ahihi-Kinau Advisory Committee. "It's been a long time coming, and I wish it had come earlier, but this is something everybody's going to win on – this is good for everyone."

Borge's sentiments were echoed through the meeting, as person after person stood to testify in support of the amendments.

Although the rule changes will affect all 19 of the state's natural area reserves, many of the proposed rules deal with concerns specific to the Ahihi-Kinau reserve between Makena and La Perouse Bay, which has been damaged by increasing visitor use.

"Ahihi-Kinau was definitely a cause for a lot of the changes," said Matt Ramsey, an Ahihi-Kinau ranger who acted as hearing officer at the Maui session on the rules proposed by the Department of Land and Natural Resources. "There was a pretty good demand from the public to address the concerns at Ahihi-Kinau."

The 1,238-acre Ahihi-Kinau Natural Area Reserve is the only marine reserve in the system and is among the most accessible.

Public testimony offered an outpouring of support for the Ahihi-Kinau rangers, and several of those who testified said that they supported the rules because they would allow the rangers to do their jobs more effectively.

"The changes will increase the ability of NARS management and local rangers to do things proactively," said Hannah Bernard, president of the Hawaii Wildlife Fund. "I want to thank the rangers, who educate people and enforce the protection of these reserves. They are ambassadors for our area."

Many who testified noted the drastic changes they have seen in Ahihi-Kinau in recent years, damage to resources that the park rangers say are a result of an increase in visitors.



"These rules would probably not have been necessary if there hadn't been so many people going to the reserve all at once," said Ahihi-Kinau ranger Joseph Fell-McDonald, who referred to the popular guidebook "Maui Revealed" as one cause for the influx of kayakers and hikers in Ahihi-Kinau. "A few years back, this wasn't a problem, but we needed to change the rules to catch up with the changing times."

There was no testimony opposing the proposed rules, but some raised concerns about areas near the Ahihi-Kinau reserve that won't be covered.

"I'm in full support of the changes, but I'm also concerned about the archaeological sites that are right outside of the reserve that aren't protected," said Hokua Pellegrino of Waikapu. "When I go to Ahihi-Kinau, I see off-road vehicles and quads all over the place, including outside the boundaries of the reserve, where there are still Hawaiian archaeological sites. We need to protect the aina as well as the marine life and the reserve." Another concern was raised by students and educators saying they visit the Ahihi-Kinau reserve for research and educational purposes, and fear rules requiring permits could affect them. A proposed rule would require permits for groups larger than 10, and the concern was that it could take months to be granted a use permit.

"I support the changes also, but I hope that it won't be so hard to get a permit for school groups," said Stephanie Kowalsky, a student at MCC and employee at Maui Ocean Center. "Ahihi-Kinau is so special for our education and research, and it would be a shame to lose it."

More than 40 people attended the hearing Wednesday at Waikapu Community Center, one of four held to give residents a chance to respond to the proposed amendments to the state administrative rules for natural area reserves. While there are 19 reserves in the state system, most are not easily accessible and a number of the proposed rules were specific to Ahihi-Kinau.

Those rules included:

Requiring permits for hiking and nature study in groups of 10 or more.

Barring bedroll camping as an activity allowed without a permit.

Forbidding the possession of tools, equipment or implements to take, injure or kill wildlife within a reserve.

Prohibiting entry into a cave.

Prohibiting the establishment of residences within a reserve.

Last year when state officials discovered a woman, Karen Mayfield, living in a lava tube at Ahihi-Kinau, the only offense for which she could be charged was for littering.

According to Ramsey, testimony from four public hearings will be compiled and reviewed by state attorneys before a final draft of the rules will go to the Natural Area Reserve Commission and the Board of Land and Natural Resources for action and approval by Gov. Linda Lingle.

Written testimony will be accepted until July 14. Testimony can be mailed to: Department of Land and Natural Resources, 1151 Punchbowl St., Room 325, Honolulu, HI 96813.

More information or a copy of the proposed rule changes is available by calling (808) 587-0051. The proposed rules can be viewed online at [www.state.hi.us/dlnr/dofaw/draftrulesindex.html](http://www.state.hi.us/dlnr/dofaw/draftrulesindex.html).

us./dlnr/dofaw/draftrulesindex.html.

Krista Walton can be reached at [kw Walton@mauinews.com](mailto:kw Walton@mauinews.com).



## Appendix II.

## Dust devils plague Ma'aonakala also

# Maui News

*Maui's Newspaper Since 1900*

**50 CENTS**



## It's not a tornado on Maui

Distant cousin dust devil swirls through cane fields

**PUUNENE** — It looked like a mini tornado, but it wasn't.

The weather phenomenon that swirled through the cane fields at Puunene caused no damage, lasted only for minutes and wasn't nearly as powerful as a real tornado.

"It was huge. It was really big," said Lisa Ann Rodrigues, director of development for the Maui Humane Society, who photographed the dust devil at about 1:30 p.m. Wednesday.

"What was weird was that there was no wind. There was absolutely no wind where we were," she said. "Everything was all still, and that's why I think a lot of people were tripping out. It was very unusual."

Those are not conditions that create tornadoes, explained Maui weather analyst Glenn James. The severe tornadoes that sweep across the Midwest every year are formed from cumulonimbus thunderheads, the massive cloud formations created by moist, hot air rising from open plains that turn into thunderstorms.

"A tornado has the most violent winds on the planet, dropping out of the base of a thunderstorm," James said.

Hawaii residents regularly see waterspouts, similar funnel cloud formations that are swirling, tornadolike wind features that form over the ocean and which also drop out of cloud formations.

"The dust devil is a distant cousin. A tornado can have winds up to 300 miles per hour. Water spouts can have winds up to 200 miles per hour. Dust devils are not anywhere near that."

He said dust devils usually form on clear days over freshly plowed fields.

**See DUST DEVIL**  
on Page A5

**FRIDAY**

October 13, 2006



**TODAY'S FORECAST FOR THE CENTRAL VALLEY**  
Partly sunny, very warm. *Complete report on A2*

**A swirling dust cloud** rises high above the cane fields near the Maui Humane Society Puunene Animal Shelter on Wednesday, getting the attention of hundreds of people around Central Maui — including society Finance Manager Patty Brady. The dust devil spun around the field for at least five minutes, according to observer Billy Petrak, who said he saw it from Kuihelani Highway.

LISA ANN RODRIGUES photo